millennial

Official Magazine of the Charlotte Research Institute

vol. 2 no. 1 SPRING 2012

nano roses

nanoscale engineering for high-tech devices

UNC CHARLOTTE

CHARLOTTE RESEARCH INSTITUTE

building our future

Construction Continues on Charlotte Research Institute Campus

Construction on the Charlotte Research Institute Campus continues with completion of the Energy Production and Infrastructure Center which opens for classes in August 2012, groundbreaking for the PORTAL building, and construction of the UNC Charlotte football stadium /McColl-Richardson Field and practice facility. In 2013, the 49ers will play their first season of football.

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New Director

UNC CHARLOTTE

CHARLOTTE RESEARCH INSTITUTE

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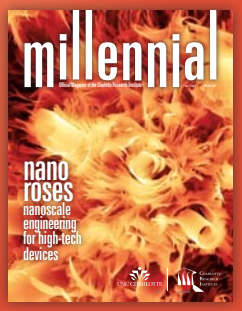

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This edition of Millennial has a very strong emphasis on UNC Charlotte's efforts to put knowledge to work. Research is fundamental to the mission of UNC Charlotte.

New knowledge and creative works change the world and shape the future of the University. We put strong emphasis on creating, imparting, and applying knowledge. As you will see in the articles that follow, these three activities often overlap and resonate in exciting ways.

Professor Ray Tsu's pioneering work on quantum properties of materials and device physics is an excellent example of the knowledge creation that the Charlotte Research Institute and UNC Charlotte are known for. We look forward to similar impact as Professor Terry Xu develops new nanotechnology results for the generation of electricity. While both of these articles begin talking about knowledge creation, with students and new applications involved, you can see the overlap and synergies of learning and translation.

Universities are well known and valued for the knowledge imparted to students during their studies. The Senior Design Spring Expo is a great example of an academic program that actively engages many business partners while providing a rigorous academic experience for engineering students. Along the way, these students also create and apply knowledge to the benefit of their partner company.

Ventureprise, the Charlotte Venture Challenge, the student business incubator, and the growing roster of CRI Biz Partners are all solid examples of the programs that UNC Charlotte puts in place to apply and translate knowledge to partners in the economic community. While our long term goal is business growth and diversity, these programs directly impact the academic programs for which UNC Charlotte is known.

Thanks for your interest in UNC Charlotte, CRI, and our research initiatives. We look forward to new opportunities for collaboration and compelling results.

UNC Charlotte Hosts C4ISR WORKSHOP

On March 29, 2012 UNC Charlotte hosted a workshop focused on research requirements to support Department of Defense applications in Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR).

Dr. Bill Tolone of UNC Charlotte served as Master of Ceremonies

The workshop was jointly organized by UNC Charlotte's College of Computing and Informatics, the Charlotte Research Institute and the University of North Carolina General Administration (UNC GA). Attendees included researchers from most of the research intensive universities in the 16 campus UNC system, research and development program managers from Department of Defense organizations, defense industry, and representatives from the US Army Special Operations Command based at Fort Bragg in Fayetteville, NC.

Kimrey Rhinehardt of UNC GA welcomed attendees to the workshop and presented information about the UNC Partnership for National Security. UNC Charlotte Vice Chancellor for Research and Economic Development, Dr. Robert Wilhelm, provided an overview of relevant UNC Charlotte research programs. Executive Director of the NC Military Foundation, Lance DeSpain talked about Federal budget trends and potential impacts to the military installations in North Carolina, impacts to defense industry in NC, and impacts to university-based research programs.

The remainder of the program included three panel sessions focused on Optics, Analytics, and Cyber Defense. Each panel included representatives from DOD, universities, and industry who made short presentations followed by question and answer sessions with the audience. The discussion was lively and could have carried on much longer than the available time. Attendees were encouraged to display posters exemplifying ongoing research programs and these posters provided a catalyst for great networking and discussion during breaks.

At the conclusion of the day UNC Charlotte provided tours of the Center for Optoelectronics and Optical Communications, Visualization Laboratory, and Cyber Defense Laboratory. This was the second in a series of workshops organized by the UNC system focused on growing connectivity between researchers and the Department of Defense. The first workshop was held in August 2011 hosted by NC A&T State University. No date or location has yet been determined for the next workshop. For more information about the UNC Partnership for National Security contact Kimrey Rhinehardt at kwr@northcarolina.edu or Kathie Sidner at ksidner@northcarolina.edu. For more information about Defense and Security related research at UNC Charlotte or the March 29 workshop contact Dr. Barry Burks at bburks1@uncc.edu or Dr. William Tolone at William.Tolone@uncc.edu.

Kimrey Rhinehardt of UNC General Administration welcomed attendees

On March 6, 2012, an overflow audience of business, government, academic and nonprofit leaders gathered at UNC Charlotte's Center City Building in uptown Charlotte to hear inspiring, succinct, and powerful presentations by some of the Charlotte region's most innovative thinkers and doers.

SEED

SEED20, the nonprofit social entrepreneur competition launched by Social Venture Partners (SVP) Charlotte, was developed to support social entrepreneurs tackling some of this area's toughest problems and to contribute to the innovative, vibrant culture in the region. The goal of SEED20 is to discover, spotlight and fund some of these compelling and socially innovative ideas that promise real impact in the Charlotte region.

A packed house enjoys SEED20 presentations.

Completion of the 2012 competition was celebrated with food and networking.

The 20 innovators of the SEED20 Class of 2012 were selected from an applicant pool of 82, and received seven weeks of coaching from business and civic leaders from across the region – to hone their messages and presentation skills. At the end of this coaching period, SVP Charlotte chose 10 finalists who pitched their ideas to a panel of judges and a live audience at **SEED20Unleashed** to compete to win a total of $30,000 in grants.

It was a high-energy event! After the live pitches and awards, the diverse group of 350+ attendees celebrated the social entrepreneurs and networked and socialized with each other. Each of the twenty nonprofits represented in the SEED20 Class of 2012 had a booth in the UNC Charlotte atrium where all attendees could interact with them and learn more about their work in the community. "The energy and enthusiasm in the building was palpable," said one attendee. "This is one of the best things to happen in Charlotte in a long time. I already look forward to next year's event!"

The competition was made possible through the support of the event's sponsors – Wells Fargo, Knight Foundation, UNC Charlotte and Topics Education. UNC Charlotte provided the space for the program's coaching sessions and the event. "The UNC Charlotte Center City Building location was the perfect place to host the event's training and our inaugural competition," stated an SVP Partner. "We are so appreciative of the great support of UNC Charlotte for this year's SEED20."

QUEEN CITY forward

QUEEN CITY FORWARD
INNOVATE FOR THE GREATER GOOD.

The Charlotte Venture Challenge partnered with a new organization in Charlotte called Queen City Forward to offer social enterprises a unique experience in the competition. Queen City Forward sponsored the social enterprise category and offered unique prizes and services to benefit entrepreneurs and innovators with high impact social enterprises.

Queen City Forward is a hub for entrepreneurs and innovators looking to create positive social change in areas such as the environment, education, and healthcare and workforce development. They are guided by the conviction that in purposefully encouraging, enabling, and scaling high impact social enterprises, Charlotte can foster a robust cluster of innovation that will measurably improve our communities and transform our economy.

Queen City Forward is a non-profit membership based organization. Membership consists of high growth, high impact social entrepreneurs and organizations dedicated to scaling their ventures. Their mission is to connect for-profit and non-profit business members to the resources and relationships needed to boost their triple bottom line focus on people, planet and profits. They are empowering the next Goodwill Industries, Habitat for Humanity or Burt's Bees, a for-profit socially conscious business in Durham, NC.

Queen City Forward is catalyzing a supportive ecosystem for entrepreneurs to drive positive social change in Charlotte. Research shows that startups lack access to: talent, capital, personal support, business knowledge and visibility. Queen City Forward addresses the needs of high growth, high impact social entrepreneurs through the following activities that connect entrepreneurs to the resources and relationships needed to grow and scale their enterprises.

RELATIONSHIPS: Queen City Forward members receive evaluation, consultation and mentoring from peers and business experts.

FEEDBACK SESSIONS: Members are provided opportunities to pitch their ideas and receive feedback from QCF's network of funders, entrepreneurs and mentors.

TALENT: Connecting enterprises to potential interns, volunteers, staff, and board members.

SPACE: Based in Packard Place, QCF provides members co-working, meeting and boardroom space in Uptown Charlotte.

CAPITAL: They facilitate smoother pathways to capital and investment through strategic partnerships with funders.

VISIBILITY: Queen City Forward seeks to raise the visibility of members through advocacy in the media and with local and state government.

QCF emerged from the Charlotte Chamber's 2010 retreat when Bull City Forward co-founder Christopher Gergen described Durham's approach to supporting social entrepreneurship. Mayor Anthony Foxx gathered city, corporate and non-profit leaders for a roundtable on social entrepreneurship last year and invited Gergen to establish a Charlotte program. Duke Energy, Foundation For The Carolinas, Fifth Third Bank and private donors provided initial funding.

"Cultivating and creating the right conditions for social entrepreneurs and social enterprises to thrive is a key element to the economic and community development strategy of Charlotte," said Foxx, chairman of QCF's Leadership Team. "Queen City Forward provides the resources needed for social entrepreneurs to grow to the next level."

Queen City Forward has a network of strategic partners, including Packard Place, Goodwill Industries, Business Innovation and Growth Council, Social Venture Partners, City of Charlotte, and the Ben Craig Center.

The first wave of QCF members include Second Helping, a food and coffee cart business that provides female ex-offenders a job and skills they need to own a business; One Moment, an online education platform and service for children with serious illnesses, and Urban Equity Advisors, which retrofits commercial buildings to be more environmentally sustainable.

To learn more, visit this website www.QueenCityForward.org.


Traction

Charlotte Venture Challenge
Where Innovation Wins

CVC 2012 EVENT COACHES AND MENTORS

The 2012 Charlotte Venture Challenge is in high gear! The competition attracted 117 start-up company applications from which the field was narrowed to 40 semi-finalists who competed at the North Carolina Research Campus for the 18 final competition spots. These highly innovative companies competed for over $100,000 in prize money on April 19th at the NASCAR Hall of Fame.

The winners were determined through two final rounds of competition where they were first judged by a panel of regional Angel investors before heading to the NASCAR Hall of Fame for their final test. On split second notice, nine teams were called up to make their final bid before a panel of Venture Capitalists. In a five minute presentation followed by a five minute round of rapid-fire questions, the teams competed for the grand prize of $50,000 from Vaterra Capital. Another $50,000 in prize money was awarded thanks to the Hauser Family Fund.

The Charlotte Research Institute is responsible for running what has become the premiere start-up competition in the Southeast. The competition accelerates the commercialization of technologies coming out of UNC Charlotte and a number of other Southeastern Universities as well as other

ENTREPRENEURS ATTEND WORKSHOP AT THE BEN CRAIG CENTER.

promising early-stage innovative companies.

The Five Ventures Business Plan Competition adopted a new name starting in 2012. It is now called the Charlotte Venture Challenge (CVC). This competition has a history of producing and showcasing some of our region's most successful early-stage companies. Many of these companies have grown into thriving businesses. The competition is an excellent example of 11 years of economic development through the acceleration of early-stage innovative companies.

Competition Growth

The competition grew significantly in 2012 attracting 117 companies from North Carolina and neighboring states.

Economic Development in Charlotte USA

The competition attracts early-stage companies from throughout the region driving new company formation. The competition works to accelerate the creation of a strong regional innovation and entrepreneurship eco-system in "Charlotte USA."

The CVC attracted companies in six categories: 1) New Energy & High Tech, 2) IT & Informatics, 3) Life Sciences and Biotech, 4) Consumer Products and Services, 5) Student Ventures and 6) Social Enterprises. Categories were selected based on those sectors that leverage UNC Charlotte and regional competitive strengths.

Entrepreneurial Education Opportunities

Building and launching a successful company is not easy. CVC process is aimed at exposing entrepreneurs to as many learning experiences as possible. Five workshops were offered to entrepreneurs over the course of the competition.

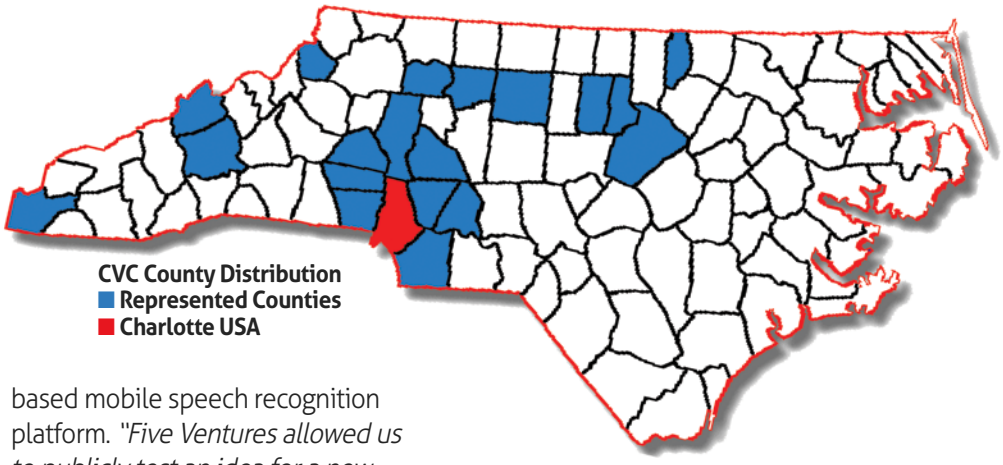
WORKSHOP #1 - Assessing Your Business Opportunity
WORKSHOP #2 – Legal and Effective Marketing
WORKSHOP #3 - Funding Your Business & Selling Your Plan
WORKSHOP #4 - Communicating Your Plan
WORKSHOP #5 – Finals Preparation and CVC Alumni Panel

Entrepreneurial Mentor Community

The CVC process involves intense mentoring. The Semi-finals were judged by 60 plus mentors that chose which start-ups were moving onto the finals. Each finalist was provided with a team of three to four experienced mentors based on what the teams needs were. These mentors volunteered their time and expertise to grow these young companies and promote entrepreneurship in our region. More than 100 people volunteered their time to grow the regional entrepreneurial eco-system.

The 2012 Finalists

This year's finalists were: Instruct Healthcare, PipePro, The Pucker Butt Pepper Company, iBid2Save.com, CanDiag, Inc., InfoSense, DealCloud, Parasol Technologies, and YoUniverisity, all from Charlotte; Qualiber, Inc., Proximitas, Good Fit and Directed Deposits, all from Chapel Hill; Orthovative Technologies from Winston-Salem; Bamboo Apparel from High Point; Dynamo Micropower from Durham; Mobile Potential from Asheville; and Friendeo from Blacksburg, VA.



Past Competitors Continue to Succeed:

YAP Inc., a 2006 Five Ventures competitor, was sold to a Fortune 100 Tech Giant in Fall 2011 for an undisclosed purchase price. Founded by brothers Victor and Igor Jablokov, YAP is a technology startup that developed an advanced cloud-based mobile speech recognition platform. *"Five Ventures allowed us to publicly test an idea for a new enterprise and gauge the public's reaction to it. Thanks to the positive reception at the event, we were able to find our first investor and board member, quickly complete a financing process and launch our company,"* stated brothers Jablokov.

SoyMeds Inc., winner of the 2006 Five Ventures and a UNC Charlotte Biology Department spin out, was recently announced as the winner of the life sciences company award by the North Carolina Technology Association (NCTA). NCTA conducts North Carolina's most prestigious statewide technology awards program, recognizing companies and individuals who have characterized excellence, innovation and leadership in 21 categories.

Infosense, a 2010 Five Ventures competitor, and **MailVu**, the 2011 winner, were both awarded grants from NC IDEA in Fall 2011. NC IDEA recognizes promising technology companies in North Carolina with grant awards up to $50,000.

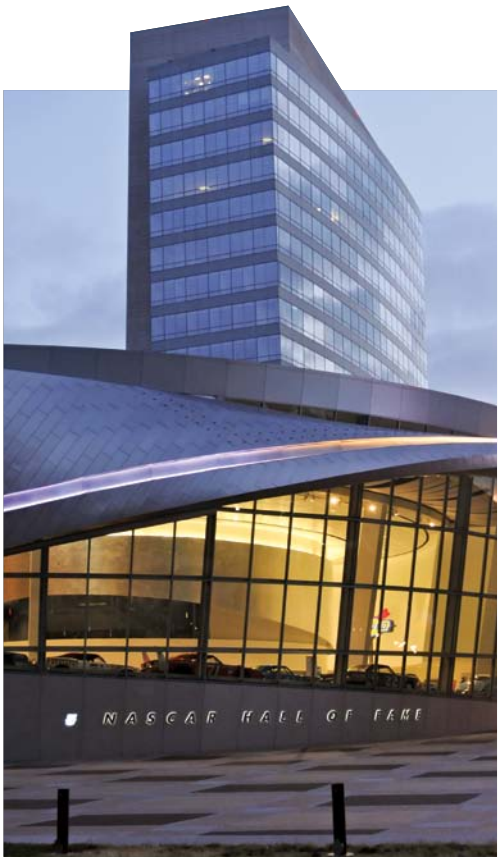
MENTOR NAMES

Padowithz Alce
Robert Aldrich
Gary Applegate
Andy Bach
Allan Bacon
Stu Bantit
Jay Bendis
Budd Berro
Sharon Blumberg
Stephen Bollier
David Bradford
Greg Brown
Kristina Burke
Barry Burks
Ruth Burnett
Manwell Bynum
Deb Carter
Tim Cheadle
Thomas Conroy
Alicia Conway
Terry Cox
Greg Crawford
Douglas Dawson
Lewis Deaton
Bryan Delaney
Bob Donlon
Alejandro Donoso
Garrett Droege
Dain Dulaney
Johan Enslin
Brad Fach
Clare Faggart
Alan Freedman
Susan Gauff
Cannon Ghelani
Sheethal Ghelani
Dave Gilroy
Dan Gotti
Jacob Hall
Betsy Hauser
Megan Hauser
Ashley Hedgecock
Mark Henry
David Himebaugh
Chris Horner
Ben Howatt
Rory Huntly
Justin Jernigan
Mason John
Dan Johnson
Vanishi Joshi
Wayne King
Sharon Lachow-Blumberg
Mike Ladd
George Ladner
Sharai Lavoie
Chad Ledford
Gilbert Lorenz
Mike Luther
Chris Marston
George McAllister
Robin McIntire
Dale Merritt
David Miller
Firoz Mistry
Jennifer Montague
David Moore
Allen Nelson
Jerry Oakes
Michael Orzech
Tom Paul
Ken Paulus
Paul Petigo
Jim Povec
Richard Purcell
Glenn Raiger
John Richert
Kathleen Rose
Dan Roselli
Chuck Sawicki
Paul Schottland
Tom Shea
Dan Sondee
Peter Stewart
Carol Swartz
Steve Thomason
Will Thompson
Scott Todd
Kevin Toomb
Greg Upham
Jim Van Fleet
Blake VandeGarde
Raquel Velez
Steve Villa
James Warder
Jeff Watson
Paul Wetenhall
Shelia Wheeler
Mem Wiggins
Walter Wilkinson
Chris Williams
Taffy Williams
AnnaLu Wilson

Charlotte VENTURE CHALLENGE Winners Selected

A sold out crowd of over 300 people gathered at the NASCAR Hall of Fame to hear start-up business pitches from nine innovative high-growth companies on April 19. This year's competition awarded $113,500 in prize money including the $50,000 grand prize from Charlotte-based Vaterra Capital.

The event featured remarks by Mayor Anthony Foxx on the importance of entrepreneurship in the Charlotte region. Dr. Robert G. Wilhelm, Vice Chancellor, Research and Economic Development at UNC Charlotte opened the event with an update on the university's commitment to entrepreneurship support. Paul Wetenhall, president of the Ben Craig Center, Inc., offered insight into the region's collaborative efforts to build a strong entrepreneurship and innovation platform.



18 Finalists Were Awarded Cash Prizes **Totaling $113,500**

Eighteen finalists waited with anticipation for their names to be called as one of the nine teams to make a final five-minute pitch and respond to rapid-fire questions from the judging panel. Having already competed earlier in the day to determine the category winners the teams now were pitching to win the $50,000 grand prize.

The judging panel included multiple perspectives from experienced investors. Panelists included Paul Grim, Sunbridge Capital, John Cambier, Idea Fund Partners, Marjorie Benbow, North Carolina Biotechnology Center, Rajeev Kulkarni 3D Systems, and Mike Marvin, MDM Advisors.

Grand prize winner, CanDiag, Inc, will receive a $50,000 convertible-debt note from Vaterra Capital. Founded by UNC Charlotte researcher Dr. Pinku Mukherjee the company has developed a novel technology that accurately detects early breast cancer. Dr. Mukherjee observes, "The investment will pave the path for further clinical validation and regulatory approval to offer women an early detection breast cancer blood test. The anticipated impacts are greater peace of mind to women from a more accurate test, and improved survival with early detection. Further, it is expected that healthcare costs will be lowered with the reduction of redundant expensive testing."

Prior to the evening event the 18 finalists went before panels of experienced angel investors to determine the category winners to present at the final round that evening. The Ben Craig Center hosted 20 angel investors from throughout the Carolinas that brought their knowledge and investment dollars to judge the finalists in Charlotte.

The $10,000 category winners included New Energy and High Tech category winner InfoSense, Inc (Charlotte, NC); IT and Informatics category winner Deal Cloud

(Charlotte, NC); Consumer Products and Services category winner Mobile Potential (Asheville, NC); and Life Science and Biotech category winner Qualiber, Inc. (Chapel Hill, NC). The student category winner was Instruct Health from Queens University. The social enterprise category winner in partnership with Queens City Forward was Bamboo Apparel (High Point, NC). The J. Chris Murphy award was awarded to the top UNC Charlotte student team PipePro.

Over the course of the evening the audience reviewed each of the pitches in preparation for their chance to choose the People's Choice winner. When the audience was asked to cast their vote via text message the $1,000 People's Choice Award went to Deal Cloud of Charlotte, NC.

All 18 finalists will receive cash prizes with total prizes reaching $113,500. Additional in-kind service prizes were provided by: Ben Craig Center, Packard Place and MailVU.

About Charlotte Venture Challenge

In 2001, the Five Ventures Business Innovation Competition was founded with the goal of helping early-stage UNC Charlotte businesses grow. Since those early days and through the support of UNC Charlotte's Charlotte Research Institute, Office of Technology Transfer and Belk College of Business, sponsors, service providers and a number of dedicated partners, the competition has grown into a region-wide economic development competition attracting companies from all over North Carolina, South Carolina, Virginia and Tennessee. Since the first competition, over 100 start-ups have made it to the finals where experts from our community have mentored them. Alumni companies have gone on to raise over $40 million in venture capital and have continued to gain national and international attention. The contest name was changed in 2012 to the Charlotte Venture Challenge.

For more information, call Devin Collins at (704) 250-5753.
Visit www.CharlotteVentureChallenge.com

it's time for...

Several organizations in Kannapolis came together to coordinate a variety of events to be part of the statewide 2012 North Carolina Science Festival. Following is a list of events that illustrate the many ways how the North Carolina Research Campus celebrated science in Kannapolis. All events were free and open to the public.

Sat, April 14, 10am-3pm – Viva Verde Earth Festival, North Cabarrus Park (760 Orphanage Rd) -This fun, family-friendly event promoted a better understanding of the environment and environmental issues through experiences & education and was organized to help the public make positive choices to develop & maintain a sustainable lifestyle. Environmental education activities, music, crafts, vendors, and more helped participants learn how to be better stewards of the earth.

Tue, April 10, 11:45am-1pm Speaker Terri Bennett, Club at Irish Creek (1196 Fairway Dr) – Author, Terri Bennett, of "Do Your Part: A Practical Guide to Everyday Green Living" was the guest speaker at the annual Friends of the Kannapolis Library meeting and author luncheon. Terri Bennett is a self described scientist, eco-expert and Mom, and she shared information about ways to live a healthier lifestyle and have a healthier planet.

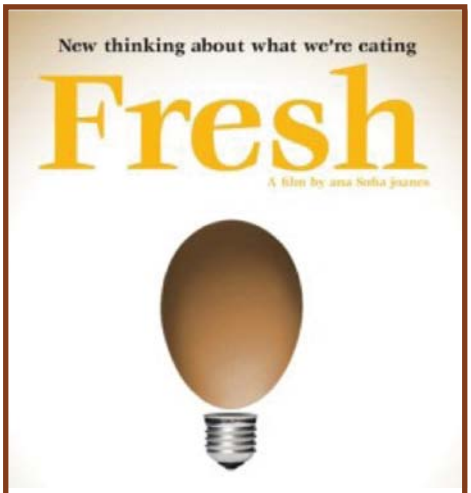
Thu, April 12, 2-3pm – Plant Fun Program, Kannapolis Library (850 Mountain St) – Many folks enjoyed plant themed stories, songs, jokes, experiments and crafts during the hour. The live action "Jack and the Beanstalk" performance entertained all who attended the event which was open to 1st–5th graders.

Mon, April 16, 7pm – "Living Proof" Film, NCRC Core Lab (150 Research Campus Dr) – The quarterly Learn and Live Film Series continued with a free showing of the movie "Living Proof." A 2008 Lifetime Network movie, Living Proof tells the story of Dr. Dennis Slamon, a UCLA oncologist and researcher, as he developed Herceptin, a breakthrough drug in the treatment of breast cancer. The movie stars Harry Connick Jr., Angie Harmon, Swoosie Kurts, Bernadette Peters and Amanda Bynes appeared in the thought provoking film.

April 16-18 – BioMoto STEM Challenge, NCRC (not open to public) – Teams comprised of 16 selected 8th-grade students came to the Human Performance Lab to be assessed for their capabilities, using the same fitness panels that pit crews use to train for NASCAR. This event was part of a program organized by the NC Biotechnology Center, the NC Motorsports Association and the Golden LEAF Foundation.

April 17 & 24 – Kindergarten Science Expo, UNC-NRI (not open to the public) – All Kannapolis City Schools kindergartners were invited to participate in a field trip to the UNC Nutrition Research Institute (NRI) for the 2012 Kindergarten Science Expo. As students arrived, NRI scientists shared a special presentation on nutrition and health. Students were split into groups to visit activity stations. The stations, created and staffed by students from A.L Brown High School's early childhood education class, provided fun, interactive, hands-on learning lessons.

Tue, April 17, 3-7pm – State of the Studies, NCRC Core Lab (150 Research Campus Dr) – The NC Research Campus, Duke Translational Research Institute, the MURDOCK Study and Carolinas Medical Center hosted an open house about the value of clinical studies and research with information on studies recruiting participants.



Thu, April 19, 4:30pm – Go Local with Your Library, Downtown Farmers Market (120 West Ave) – People had an opportunity to join the Kannapolis Library at the Farmers Market for a chance to see where your local food comes from. The documentary "Fresh" was shown demonstrating the importance of eating locally. Afterwards, attendees gathered for a tour of the Farmers Market for a chance to meet local farmers. There were displays and interactive activities to explore.

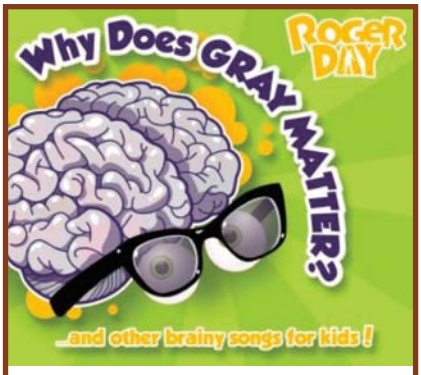
Wed, April 18, 4-5pm – Rookie Science, Kannapolis Library (850 Mountain St) – For grades K and up, kids participated in a fun experiment using air and some things one would find around the house. They constructed a hover craft that actually hovers, and a balloon race car that really could race. Through these activities they learned why they work.

Thu, April 19, 6:30-8pm – STEM in the City (Gem Theatre Special Events Room, 111 West 1st St) – There are so many ways the City of Kannapolis departments use math, science, engineering and most of all technology in daily work environments to keep the City running smoothly. On Thursday evening a crowd heard from the Public Works Department about how they keep the "guts" of the city – our storm water system and other infrastructure – monitored and running. STEM in the City is part of a series of Science Cafes which showcase how STEM is used in the everyday operations of the City government.

Fri, April 20, 9am – Moment of Science, Kannapolis City Schools (not open to the public) – Starting at 9 am, the Kannapolis City Schools teachers conducted a science lesson or integrated a science component into their instruction as part of a "Moment of Science" theme. For example, a high school English teacher discussed humanity's responsibility for its creations through a passage from the classic Frankenstein by Mary Shelley.

Fri, April 20, 2-5pm – NC Museum of Natural Sciences Virtual Library Opening & Open House, RCCC @ NCRC (399 Biotechnology Lane) – Rowan-Cabarrus Community College hosted a real and virtual open house. The college was selected to be the Kannapolis branch of the NC Museum of Natural Sciences' new wing in Raleigh. Rowan-Cabarrus will be the pilot virtual version of the museum library. Additionally, the college had an open house of its STEM (Science, Technology, Engineering, and Math) initiatives.

Tue, April 24, 6-8pm – STEM in the City (Gem Theatre Special Events Room, 111 West 1st St) – On Tuesday, April 24, the Police Department gave a sneak peek on topics like crime scene technology, accident reconstruction, and patrol car technology. This was the second of the three STEM in the City Science Cafes which showcased how STEM is used in the everyday operations of the City government.



Sat, April 28, 2pm – Nutribrain Sing-a-Long with Roger Day, UNC NRI (500 Laureate Way) – Folks had an opportunity to come ride the "Brain Train" with Parents' Choice® Award winning singer/songwriter Roger Day and learned how a local scientist is working to discover more about "BRAIN FOOD!" The Cheatham Nutrition & Cognition Lab hosted a free concert featuring Roger Day and his new album, WHY DOES GRAY MATTER? The songs are so catchy that kids and parents alike didn't realize they were learning about how food affects brain development.

Thu, April 26, 6-8pm – STEM in the City (Gem Theatre Special Events Room, 111 West 1st St) – Thursday, April 26, folks heard first hand from the Fire Department about basic fire science, calculations and consideration in public safety, and how citizens can apply this at home. This was the third of the STEM in the City Science Cafes.

NCRC Calendar Of Events

To learn more about entertainment, sports and outdoor activities available in Kannapolis and the Charlotte region, check out city of Kannapolis, Visit Cabarrus, and Visit Charlotte.

EVERY THURSDAY
Time: 3 pm to 6 pm
Event: Farmers Market
Description: The indoor, year-round Farmers Market in downtown Kannapolis allows everyone to bring the goodness of fresh fruits and vegetables, hams, jellies, jams, honey, baked goods and the work of local artisans home every week.
Location: 120 West Avenue, downtown Kannapolis
Contact: Phyllis Beaver, NC Research Campus, pbeaver@castlecooke.com or Piedmont Farmers Market, 704-920-3310 or lisaw@ctc.net.

SATURDAY, APRIL 21
Time: 1 pm to 5 pm
Event: Kannapolis Zucchini 500
Description: The Zucchini 500 is back in Kannapolis! Kids, come out to 2011 Sprint Cup Champion Tony Stewart's race shop to build your own pinewood derby-style race car made entirely out of vegetables! "Souped-up" zucchini race cars compete for prizes on a 16-foot track. Kannapolis, a Let's Move! city, celebrates motorsports and healthy living at this family event. This program is part of the NC Science Festival.

UNC Charlotte hosted a free, public Science and Technology Expo on the lower campus.

it's science!

The North Carolina Science Festival UNC Charlotte Science and Technology EXPO was an amazing event that brought a large crowd of families from the area and alum's back to the campus. It wrapped up two weeks of activities in Charlotte on Sunday, April 29th. This free, public event was located in the lower campus mall between Halton Arena and the Student Union.

The North Carolina Science Festival was created to inspire children and adults to pursue education and careers in science, technology, engineering and mathematics. Charlotte, North Carolina and the nation need more people trained and working in these STEM disciplines in order to keep us competitive in today's worldwide knowledge economy and providing these science-based events is a means of outreach toward this goal.

The Expo featured more than 20 interactive displays for the science-curious of all ages. The William States Lee College of Engineering, the College of Computing and Informatics, the College of Health and Human Services, the College of Education, the Department of Chemistry, the Department of Physics and Optical Science, the Department of Geography and Earth Sciences, the Department of Biology, and the Botanical Gardens
all participated by hosting exhibits, demonstrations and displays.

Festival sponsors included: the Charlotte Research Institute, College of Liberal Arts & Sciences, College of Computing and Informatics, and College of Education.

SIGNATURE EVENT

The North Carolina Science Festival brought two TV stars who specialize in science entertainment – Adam Savage and Jamie Hyneman, hosts of the Discovery Channel television show MythBusters – to the campus of the University of North Carolina at Charlotte.

"An Afternoon with Adam and Jamie" was presented on Sunday, April 29, 2012, in UNC Charlotte's Halton Arena. During the 90-minute program, Adam and Jamie shared stories from behind the scenes of their popular show. They also featured special video presentations of spectacular explosions and other "for fans only" outtakes. The program included a moderated question and answer session. This was an official signature event of the North Carolina Science Festival. Charlotte's Discovery Place was a strategic Partner of the Festival.

In each episode of their TV show, Adam, Jamie and their team of investigators apply scientific method to commonly-held beliefs, testing myths with lava lamps, rockets, sharks, port-a-potties and other items not found in the typical science lab. Their experiments have included converting a vacuum cleaner into a jet engine, swinging 360 degrees around a swingset and floating on a raft filled with helium. Adam & Jamie have the kind of jobs that many science geeks and teenagers would love to have. Attempting to debunk myths and urban legends and popular misconceptions through scientific testing and experimentation, the show they host has explored hundreds of myths over the last nine years.

Uddin Motor SPORTS

When talking to Mesbah Uddin you are aware that he is an extremely articulate engineer who knows a lot about cars, but soon the discussion goes beyond the mechanics of what makes a car move and you begin to learn that he is a man that likes to go places—fast.

His dream is to own a Dodge Challenger SRT8® Yellow Jacket, which is not really hard to comprehend when you understand that Dr. Uddin is a successful research expert in vehicle aerodynamics and aeroacoustics, who has traveled the world, and worked with a number of racing organizations and OEMs (Original Equipment Manufacturers).

From Bangladesh to Australia; Australia to Bangladesh; Bangladesh to USA; USA to Bangladesh; Bangladesh to Canada; Canada to Detroit; Detroit to Charlotte, working in academia and in industry, Dr. Uddin's travels have afforded him the opportunity to study fluid flows ranging from very slow ones inside the human air way to the ultra fast ones over NASCAR cup cars and Top Fuel Funny cars. Thus, he came to know ways to streamline new levels of research in aerodynamics for the improvement of passenger and racing cars performances. By studying the behavior of the vehicles at these fast speeds, Uddin strives to discover ways and means to make changes so vehicles can run at higher speeds safely.

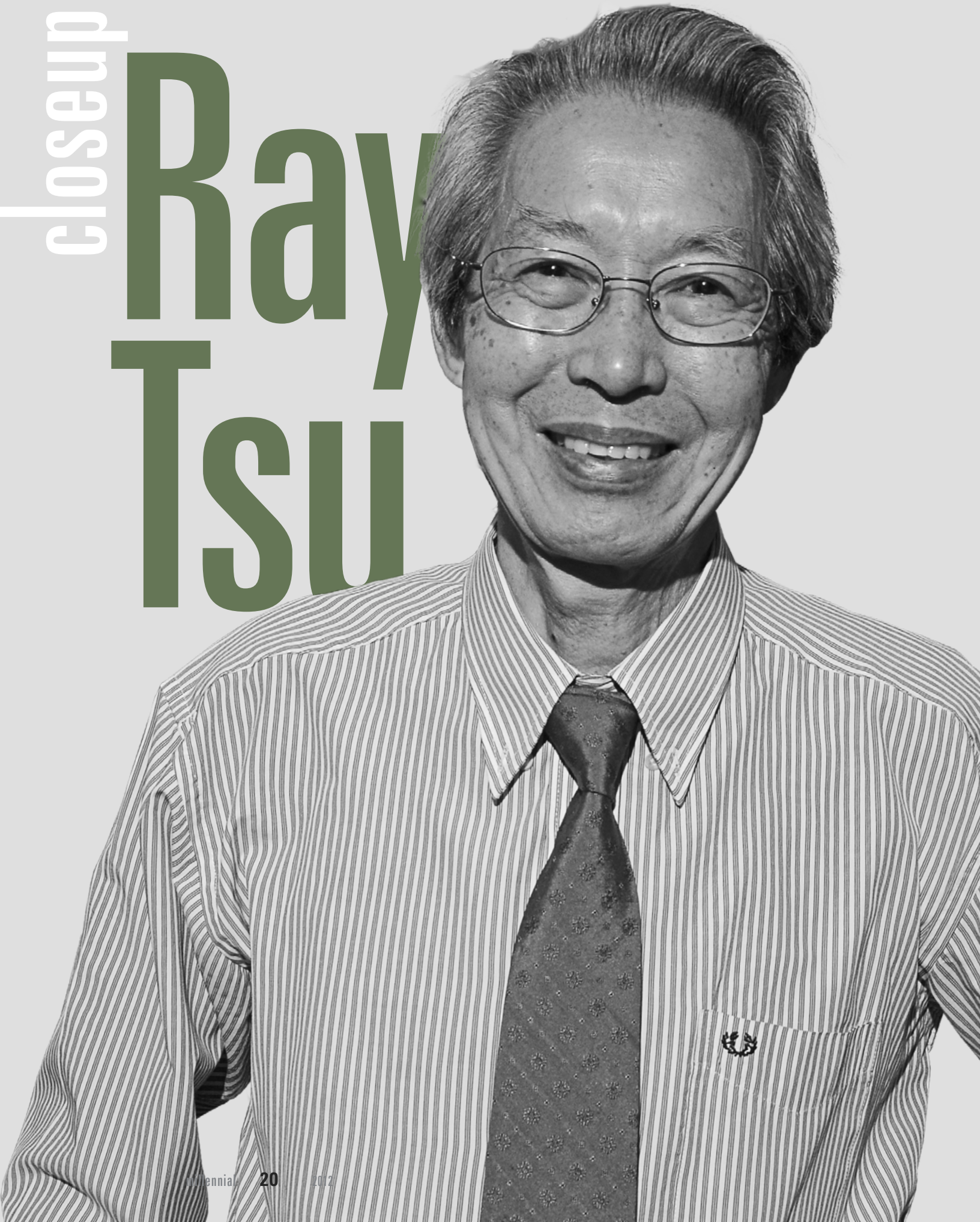
In 2005-2006 Dr. Uddin had an opportunity to work in partnership with an engineer to redesign the aero-package for the 2007 Challenger that Chrysler planned to have ready to compete with the redesigned Camaro. What should have taken more than 40 months to finish, had to be completed in less than 30 months to meet the deadline. The objective was to make this muscle car drivable for up to160 mph and keep it on the road. Uddin and his partner worked together and came up with a design that included a spoiler for the rear and added a splitter on the front to keep the car from becoming airborne at high speeds. At the final hour, Dr. Uddin also designed a brake-duct component to help cool the brakes in order to keep them from burning out.

Dr. Uddin has a very successful program in vehicle aerodynamics and has worked with a number of racing organizations which makes him an excellent choice to assume the leadership role as Director of UNC Charlotte's North Carolina Motorsports and Automotive Research Center. He has big plans for the future of NCMARC.

Currently, in addition to his ongoing projects involving NASCAR Cup cars, Dr. Uddin is working with UNC Charlotte Motorsports students on a project to address The National Hot Rod Association (NHRA) challenge regarding The Top Fuel class car parachutes not being deployed in time to stop the speedster within a short distance. In 2008 a fatal crash involving the driver Scott Kalitta in English Town, NJ made the drag racing community conscious of the necessity to identify the most optimum location for chute placement deployment under varying racing conditions. In the UNC Charlotte motorsports program overseen by Professor Uddin, a student's research project will use Computational Fluid Dynamics (CFD) tools to evaluate the flow-field around a Funny Car. The goal is to find a solution quickly so that NHRA can revert back to quarter mile races instead of current post 2008 reduced distance of 1000 feet. There are other projects that Dr. Uddin plans to offer UNC Charlotte Motorsports students that will offer opportunities for these future engineers to make a difference in the automotive and motorsports engineering fields. If you are on the Charlotte Research Institute Campus and you want to see what's going on in Motorsports, just drop by the new building and take a look around. You'll be surprised at what is happening right here on the CRI Campus at UNC Charlotte.

closeup

Ray Tsu



UNC Charlotte Distinguished Professor of Electrical and Computer Engineering Ray Tsu, recently received a great honor. He didn't get a gold statuette or a free plane ticket to Stockholm, but it was a great honor nonetheless.

He approaches his research with a level of integrity that is unsurpassed. This has an enormous impact on the career development of other faculty and, especially, on graduate students.

How do you measure the importance of researchers and their research? Actors measure the importance of their work by the number of Oscars they have won, but researchers, even though their work may seem arcane to the general public, actually have a far more basic way of proving their worth. It's called the citation.

For those who don't know, a "citation" is simply a reference in a research article to another, earlier article. Because all research is based on the foundation of the findings that came before, a citation is a fundamental acknowledgement that an earlier piece of research is important to the work currently being done. The more times a research article gets "cited" in other articles, the more the real experts in the field (the real "Academy," in the full sense of the word) have implicitly voted to say that a piece of work is important to them.

Of course all research publications are not born equal. Articles appearing in the premiere journals in a researcher's field tend to be taken more seriously by the academy of researchers in that field. The articles that get the most citations in those journals tend to represent truly seminal research.

Tsu was recently honored by being named among the small group of elite scientists and engineers whose names appear on a recent list of "50 Most Cited Papers" published in the prestigious journal Applied Physics Letters' full 50-year history. Articles co-authored by Tsu appear on this rarified list twice – 4% of the journal's top articles, according to an impartial jury of his peers.

"Applied Physics Letters is one of the premiere journals in the field of Physics," noted Glenn Boreman, chair of the Department of Physics and Optical Science at UNC Charlotte. "The fact that Dr. Tsu's work includes two of the most cited articles in the last 50 years is very significant indeed, and speaks directly to the pervasive and fundamental impact of his research."

Tsu is an authority on quantum properties of materials and device physics. The listed articles are "Tunneling in a finite superlattice" (from APL 22) and "Resonant tunneling in semiconductor double barriers" (APL 24).

"The impact that Ray has had on his field is also mirrored in the impact that he has had on UNC Charlotte," noted Bob Wilhelm, vice chancellor for research and economic development. "For 24 years, Ray has come to work every day stoked, and his enthusiasm about science and investigation has been infectious to everyone around him."

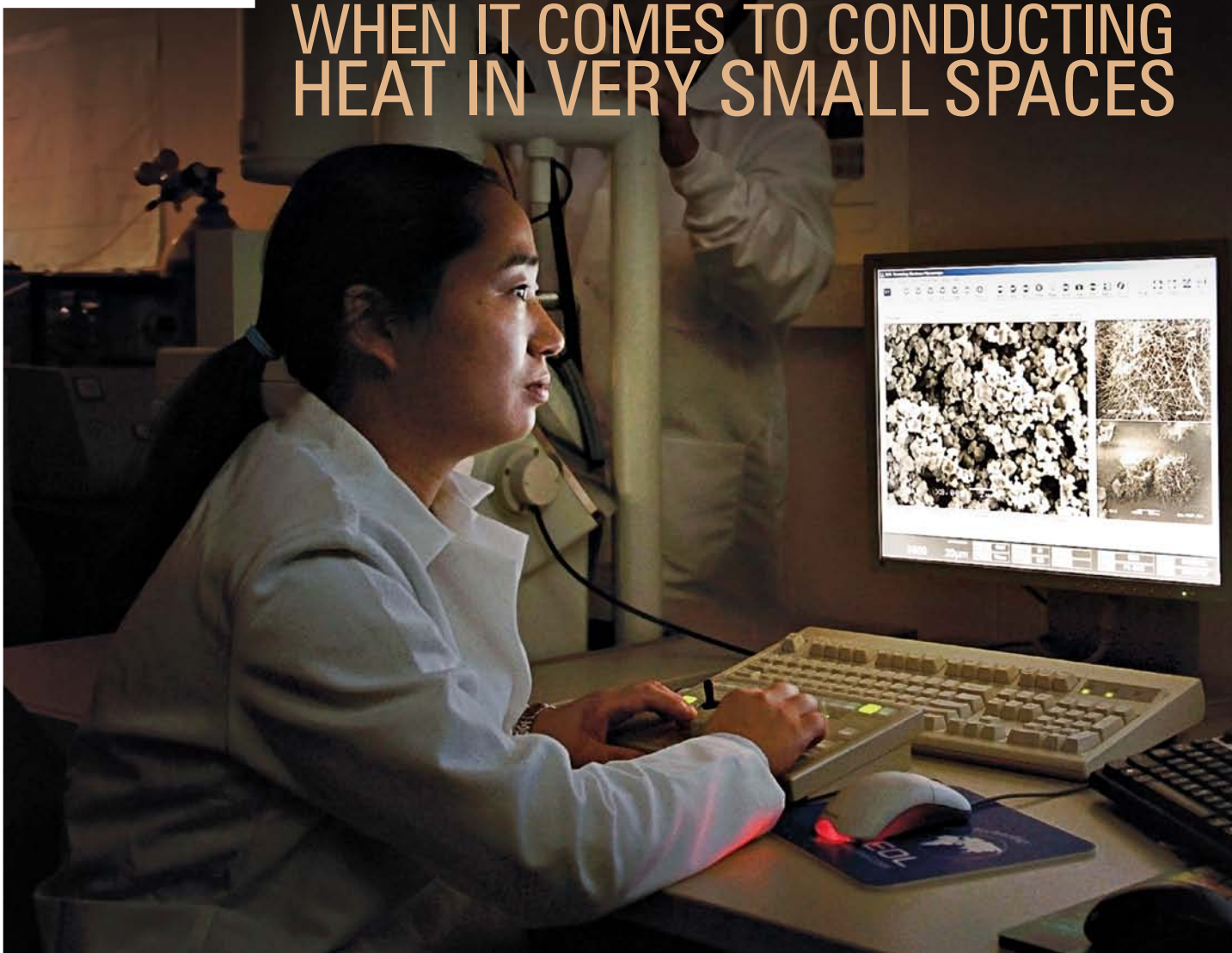
"He approaches his research with a level of integrity that is unsurpassed. This has an enormous impact on the career development of other faculty and, especially, on graduate students. His energy and his reputation have raised the profile of the whole institution," Wilhelm said.

SIZE MATTERS

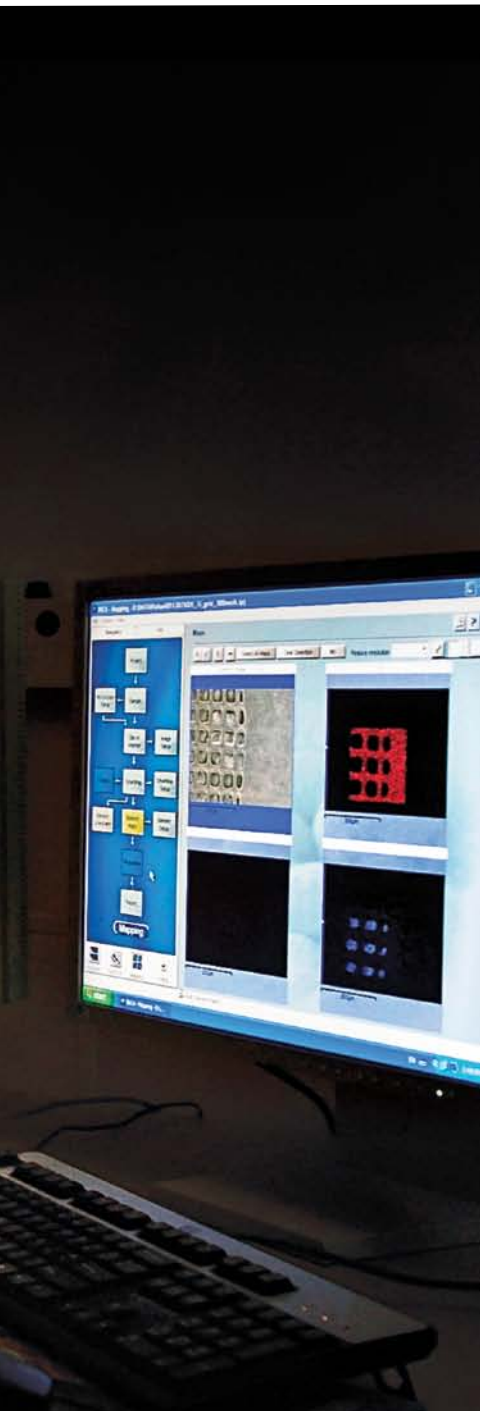
BUT SO DOES SHAPE

WHEN IT COMES TO CONDUCTING HEAT IN VERY SMALL SPACES

Boron nanoribbons wrap up the problem of thermal conductivity in very small bundles



While the technological products of nanoscience research are as commonplace to us as our cell phones and computers, most people have come to accept that and the sophisticated engineering behind these high-tech devices and the exotic properties of matter at the nanoscale that engineering manipulates are simply too strange for most of us to understand.



Then, along comes research that discovers something basic – in this case, that shaping a material in a nanoribbon rather than in a nanowire has a significant impact on the way it conducts energy – and suddenly the science and engineering don't seem so mysterious after all.

UNC Charlotte mechanical engineer Terry Xu and a team of materials scientists recently looked at the thermal conductivity of boron nanoribbons and found that they have unusual heat-transfer properties when compared to other wire/tube-like nanomaterials. While past experiments have shown that bundles of non-metallic nanostructures are actually less effective in conducting heat energy than single nanostructures, Xu's study shows that bundling boron nanoribbons can have the opposite effect and "the thermal conductivity of a bundle of boron nanoribbons can be significantly higher than that of a single free-standing nanoribbon," according to a report published in Nature Nanotechnology last December.

The finding was the result of work by a multidisciplinary team headed by Xu, Ravi Prasher of the Advanced Research Projects Agency, and Deyu Li of Vanderbilt University (a complete list of authors is at the end of this article).

Additionally, the researchers found that the unusual heat-transfer properties of boron nanoribbon bundles can be modified, allowing the higher thermal conductivity to be switched on and off through relatively simple physical manipulation. The study concludes that the ribbon structure of the nanomaterials is strongly related to the unusual thermal conductivity of the bundles.

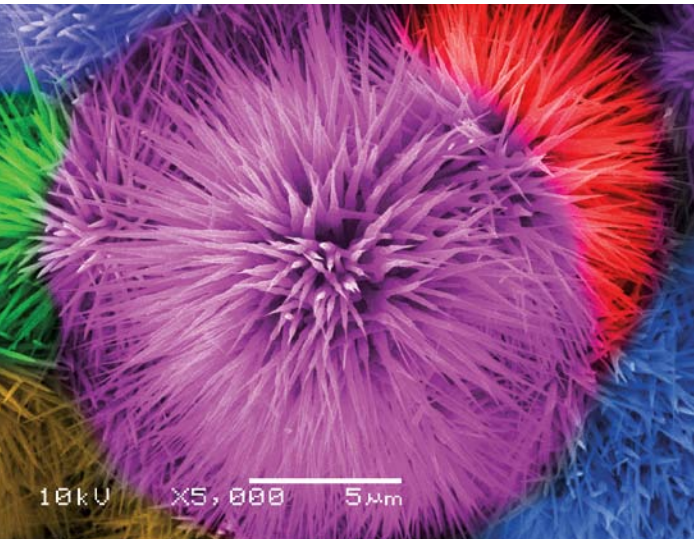
Boron-based nanostructures are a promising class of high temperature thermoelectric materials – substances that can convert waste heat to useful electricity – and thermal conductivity is related to other thermoelectric properties. Physicists describe the transmission of heat energy in materials like boron as happening through the conduction of "phonons," quasi-wave-particles that carry energy through excitations of the material's atoms.

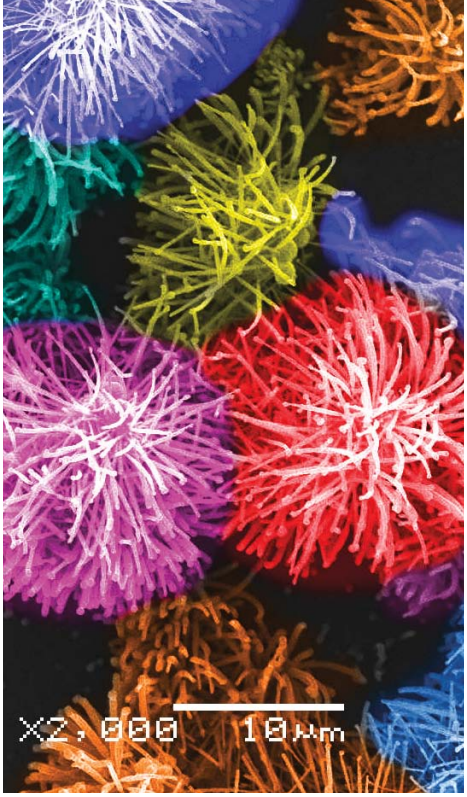
Boron-based nanostructures are a promising class of high temperature thermoelectric materials – substances that can convert waste heat to useful electricity – and thermal conductivity is related to other thermoelectric properties.

"What we found was largely unexpected," said Xu. "When two nanoribbons were put together, the thermal conductivity was found to rise significantly rather than staying the same or going down, as has been the case in previous measurements. It has been assumed that phonons were hampered by the interface between the individual nanostructures in similar materials.

"That seems to mean that the phonon can pass effectively through the interface between two boron nanoribbons," she said. "The question is whether or not this result is due to the weak interactions between two nanostructures of ultra-flat geometry."

The team believes that the reason for the enhanced thermal conductivity is due



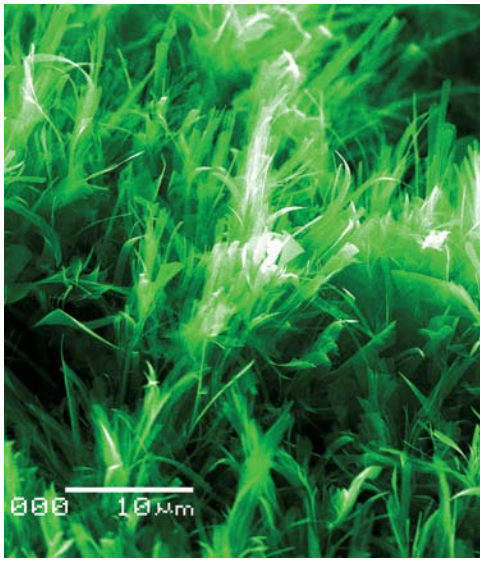


Xu notes that potential engineering applications come not just from the improved thermal conductivity of boron nanoribbon bundles, but also from the reversible nature of the effect.

in large part to the flat surface structure of the nanoribbons. This conclusion was supported by another experimental result that the group discovered more or less by accident.

The nanoribbon bundles exhibiting the unexpectedly higher thermal conductivity were originally prepared in a solution of reagent alcohol and water, which was then allowed to evaporate, leaving some nanoribbons drawn together by van der Waals force (the weak attraction that non reactive and uncharged substances can have for each other). When other members of the team attempted to duplicate this result, however, the experiment failed and the bundles only had the lower thermal conductivity of single ribbons, which was puzzling.

The researchers then noted that a significant difference between the two attempts was that the second experiment had used isopropyl alcohol rather than reagent alcohol in the solution. Since isopropyl alcohol was known to leave minute residue following evaporation, the researchers suspected that a residue was forming on the ribbons surfaces – a fact that microscopy later confirmed -- and the residue apparently prevented tight contact between two nanoribbons. Further tests were made on the lower-conducting bundles, where the ribbon interfaces were washed with reagent



alcohol to remove the isopropyl residue, and in this experiment the higher thermal conductivity was achieved.

The results point to the conclusion that boron nanoribbons form better heat-conducting bundles because the ribbons flat surfaces allow for tighter, more complete contact between the individual structures through van der Waals interaction and improved transmission of phonons overall.

"The result implies that achieving a tight van der Waals interface between the ribbons is important in thermal conductivity, something their geometry encourages," Xu said. "It is possible that this result may have implications for other materials with ribbon-based nanostructures."

Xu notes that there are potential engineering applications for the finding come not just from the improved thermal conductivity of boron nanoribbon bundles, but also from the reversible nature of the effect.

"This may lead to a simple way to switch the thermal conductivity of the bundle on and off," she said. "If you want more heat dissipated, but only in certain conditions, you can apply a solution to create a bundle structure with tight bonds and higher thermal conductivity. It could similarly be reversed by adding a residue between the nanoribbons and reducing the thermal conductivity to that of an individual ribbon."

The finding appears in a letter to Nature Nanotechnology. The authors are Juekuan Yang, Yang Yang, Scott Waltermire and Deyu Li from Vanderbilt University; Xiaoxia Wu, Haitao Zhang, Timothy Gutu, Youfei Jiang, and Terry Xu from UNC Charlotte; Yunfei Chen from Southwest University in Nanjing, China; Alfred Zinn from Lockheed Martin Space Systems and Ravi Prasher from the Advanced Research Projects Agency in the US Department of Energy. This research was funded by the National Science Foundation and Lockheed Martin.

University Business Partner SAPREX

Saprex™ excels at rapidly researching, developing and scaling advanced material solutions that protect people and insulate equipment in extreme environments including fire, high-heat, cut and chemical resistance.

In addition to the Gastonia location, Saprex recently opened a new advanced materials lab in Grigg Hall on the University of North Carolina, Charlotte Research Institute Campus, which will further accelerate the company's research and development capabilities.

Saprex offers comprehensive applied material research, product development, testing, production and a growing range of innovative products for a variety of industries. The company's founder, Robert Goulet, has more than 20 years of experience in manufacturing, product development, sales and business management.

Saprex specializes in developing customized solutions to protect people and insulate equipment in environments where fire, high-heat and chemical risks are prevalent. In their first two years, Saprex commercialized five new product lines, nine products and several more are in late stage development and will be released to the market in the coming months. Current product highlights include (but are not limited to):

- A revolutionary insulation system for engine exhausts
- A new reactive flame retardant material
- A flexible composite system
- A break through cut resistant fabric

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change

New Director New Center Name,

February 2012 saw some big changes in the Center for Biomedical Engineering Systems at the UNC Charlotte William States Lee College of Engineering. Charles Y. Lee, Ph.D. was appointed Director and Dr. Robert G. Wilhelm, Vice Chancellor for Research and Economic Development officially approved a name change. The center will now be known as the Center for Biomedical Engineering and Science.

Dr. Charles Y. Lee

Under Dr. Lee's leadership, the Center will continue to foster interdisciplinary and collaborative research at the interface between Biomedical Science and Engineering. The Center's mission to foster advancements in biomedicine through interdisciplinary research at the interface of biomedical science and engineering will also be enhanced by promoting translational research activities among its affiliates.

The focus areas or research within the Center will continue to be Medical Therapies and Technologies, Molecular Engineering and Design, and Biomechanics and Mobility Research with their respective focus area leaders; Drs. Mark Clemens, Don Jacobs, and Nigel Zheng.

Established in 2005, CBES serves the Charlotte metropolitan area by providing the infrastructure to enable biomedical faculty, researchers, clinicians, practitioners, and students to collaborate on solving biomedical issues. The Center's mission followed by their goals below, reveal a strong foundation for its strategic growth at UNC Charlotte and in the community:

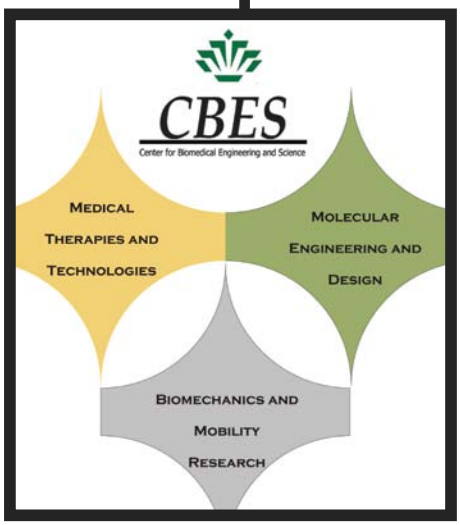
The Center's Mission:

The complexity of biomedicine requires collaborative and multi-disciplinary efforts to make optimal advancements. The CBES mission addresses this by fostering interdisciplinary collaborations for advancing biomedical research and development. As such, CBES provides the infrastructure for faculty and students at UNC Charlotte and biomedical researchers in the Charlotte metropolitan area to collaborate on critical biomedical issues and transition their technology from benchtop to commercial and/or clinical use. In this way CBES researchers are able to synergize their expertise to strongly impact biomedical research, development, and practices.

Goals:

- Enhance the roles of traditional academic departments at UNC Charlotte by providing cross-disciplinary research opportunities for faculty and students toward solving critical biomedical issues.
- Synergize the biomedical related activities at the University and the Charlotte area by facilitating interdisciplinary research collaborations.
- Provide technical support to local, state, and federal agencies on biomedical engineering and science issues.
- Establish mutually beneficial collaborations on projects with the private sector, especially hospitals and other health agencies.Provide guidance and service for transitioning biotechnology from benchtop to commercial use and/or clinical practice.

The Center's team approach to problem solving is critical since the complexities of biomedical issues require interdisciplinary and collaborative efforts to make optimal advancements. The CBES



research team currently consists of 45 affiliated researchers distributed across four Colleges of the University (the Colleges of Engineering, Arts & Sciences, Health & Human Services, and Computing & Informatics), and in the greater Charlotte area (OrthoCarolina, Carolinas Medical Center, and Presbyterian Hospital). The following represent the educational and clinical units from these areas:

- UNC Charlotte Department of Mechanical Engineering and Engineering Science
- UNC Charlotte Department of Biology
- UNC Charlotte Department of Physics and Optical Science
- UNC Charlotte Department of Mathematics and Statistics
- UNC Charlotte Department of Electrical and Computer Engineering
- UNC Charlotte Department of Chemistry
- UNC Charlotte Department of Kinesiology
- UNC Charlotte Department of Computer Science
- OrthoCarolina
- Carolinas Medical Center

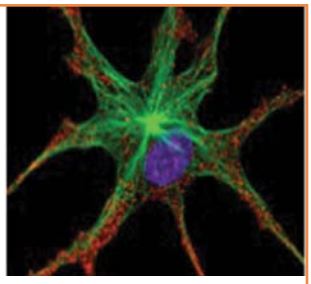
Through the efforts of our three focus areas – Medical Therapies and Technologies, Biomechanics & Mobility Research, and Molecular Engineering & Design – CBES annually supports biomedical research, workshops, seminars, conferences, graduate student travel, and other events.

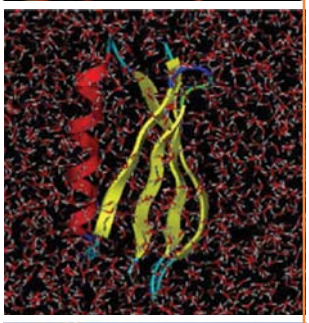
CBES Focus Areas

Medical Therapies & Technologies (MTT)
Dr. Nigel Zheng
Orthopedic Implants
Immunological Issues
Design and Manufacturing of Orthopedic Materials
Quality assurance of Orthopedic Materials

Molecular Engineering and Design (MED)
Dr. Donald Jacobs
Biomaterials and biocatalysts
Molecular recognition and design
Biosensors and drug delivery systems
Molecular machines and self- assembly

Medical Therapies and Technologies (MTT)
Dr. Mark Clemens
Transplantation
Tissue Engineering
Biopreservation
Cancer Treatment
Biomedical Devices & Strategies
Optical Probing





NEW BEGINNING

Talented Researchers

The growth and successes of our Center are due to the active involvement of our talented researchers. To find out more about their work or to become involved in future CBES activities, check out http://cbes.uncc.edu or call one of the following focus area leaders:

Charles Y. Lee, Ph.D.
Director, Center for Biomedical Engineering and Science
Office: (704) 687-8364
Email: cycle@uncc.edu

Mark G. Clemens, Ph.D.
Focus Area Leader, Medical Therapies and Technologies (MTT)
Office: (704) 687- 8682
Email: mgclemens@uncc.edu

Donald J. Jacobs, Ph.D.
Focus Area Leader, Molecular Engineering and Design (MED)
Office: (704) 687-8143
Email: djacobs1@uncc.edu

Nigel Zheng, Ph.D.
Focus Area Leader, Biomechanics and Mobility Research (BMR)
Office: 704-687-7301
Email: nzheng@uncc.edu

SENIOR DESIGN

experience creates career spring fever at UNC CHARLOTTE

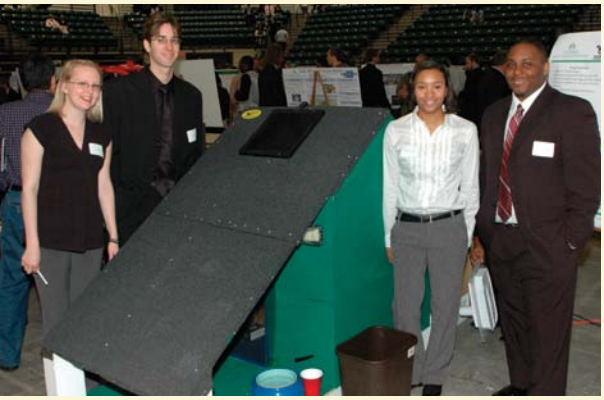
It must be springtime on the Charlotte Research Institute (CRI) Science and Technology campus. Students wearing suits and ties are walking around, all smiling and greeting each other with high fives and handshakes.

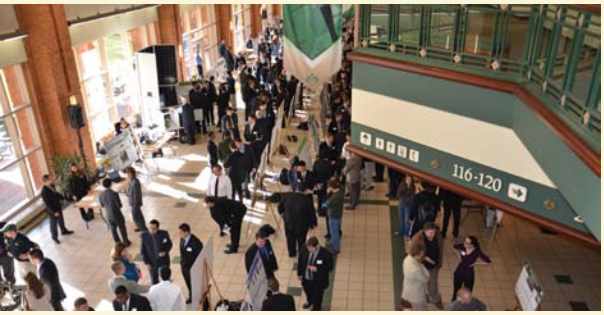
The annual Senior Design Spring Expo is a big event at UNC Charlotte where students from the William States Lee College of Engineering Senior Design Program display progress on their industry sponsored projects. The program represents a great opportunity for industry partners to help develop tomorrow's engineers and technologists. From March 23 through 30 the Conceptual Design Reviews were held for the 22 projects that were initiated in January 2012. These project teams will present their design status at the Spring Expo. Fifty projects were initiated in August 2011 and will present their final design status and prototypes at the Spring Expo.

The Senior Design Program brings together some of UNC Charlotte's engineering college's most creative and innovative students who are afforded unlimited possibilities for learning and achievement, and opportunities to work with industrial partners in a collaborative research environment where they tackle real-world engineering problems. The program, led by Linda Thurman, director of Employer Relations and Student Professional Development at the Lee College of Engineering and Bill Heybruck, director of the college's Industrial Solutions Lab, brought national recognition to UNC Charlotte at the Conference for Industry and Education Collaboration (CIEC) event where they were presented with the "Best Session Award" in Orlando, Florida in February 2012.

Thursday, May 3, Thurman and Heybruck brought the latest group of these UNC Charlotte inventive students along with their design projects and industry advisors together to present their design results and prototype systems to industry partners, faculty, staff and other UNC Charlotte engineering students. The following are projects represented at the May 3rd expo:

AREVA	Energy Education Project for High Schools
AREVA	Improving Electrical Distribution System (EDS) in Nuclear Power Plant Utilizing ETAP - Post Fukushima Study
ASHRAE	Nanofluids Flow and Heat Transfer
Baldor Electric	Motor Test Fixture with variable shaft loads
Bosch Engineering	Pedestrian Safety Alert System 1&2
Duke Energy	Cooling Water Intake Structure Modification
Duke Energy	Grid-Connected Renewable and Modular Micro-Source for Smart Grid Applications
Duke Energy	Water Intrusion Prevention
Duke Energy	Predictive Technologies and Service Life of Electronic Components
Freightliner Custom Chassis	Ballast Loader
IEEE	IEEE SoutheastCon 2012 Hardware competition teams 1&2
ICB Greenline	AutoLube for Converyor System
Irwin Tools	Improving Clamping Efficiency of a OHBC
Livingston&Haven	VFD driven variable hydraulic pump performance testing
Maclean Power	Automated Assembly Line
METSO Power	Biomass Gasification
NASA	Asteroid Anchor
NASA	NASA Student Launch
NASA	Prognostics and Remaining Life Estimation for Switch-Mode Power Converters
NASA	NASA Lunabotics Competition
PAVCO	Plating Bath Sensor Development
PAVCO	Neural Network Algorithm Development and Test
Preformed Line Products	FAS Assembly Machine
SABO Inc	Video Inspection System for Bonded Seals
Schaeffler Group	Multiple Axis Cartesian Robot
Schaeffler Group	Telemetric Transmission Bearing
Shaw Group	Tidal Power GeneratorII
Shaw Group	Feedwater Heater Rigging and Removal
Siemens	Winding Drum Handler
Smith Setzer and Sons	Beach Wheelchair
Southern Company	Turbine cover Fixture
TVL International	Propane Tank Weight Monitoring Scale
TVL International	Pet Locator
US Air Force	AFOSR Challenge-Climbing Assist
US Liesure	Box Handler for Manufacturing Line
Westinghouse	Working Model of Gen III Nuclear Plant
UNC Charlotte CGI Initiative	AluminumCan/Plastic Bottler Recycler Team A&B
UNC Charlotte	ASME Design Competition
UNC Charlotte MS	Baja Gearbox
UNC Charlotte MS	Baja Overall
UNC Charlotte ECE	Electromagnetic Propulsion
UNC Charlotte MS	FSAE Chassis
UNC Charlotte MS	FSAE Drivetrain
UNC Charlotte MS	FSAE Engine
UNC Charlotte - ET	Hydraulic UTM Upgrade
UNC Charlotte ECE	Maximizing Efficiency of Solar Arrays via Dyamic Control of
UNC Charlotte ECE	Medical Remote Monitoring System
UNC Charlotte ECE	Negative Capacitance/Inductance Integrated Circuit
UNC Charlotte ECE	Pipe Robot
UNC Charlotte ECE	Prognostics of Switch Mode Power





Spring 2012 Project Name	Company
Laser Scanner with iPad Control	UNC Charlotte
Solar Cellphone Charging Hub	UNC Charlotte
Pallet Jack for Grigg Hall	UNC Charlotte
Automatic Artifact 1	Manufacturing Labs, Inc.
Dry Cask Storage of Spent Nuclear Fuel	URS
Chariots for Disabled Children	Chariots of Freedom
Hand Held Magnetic Dust Removal Brush	NASA
Powered Exoskeletal Shoulder Assistive Device	UNC Charlotte
Automated Artifact 2	Manufacturing Laboratories, Inc.
Chariots for Disabled Children 2	Chariots of Freedom
METSO Biogas 2	METSO Power
Case for DP Generator	Discovery Place
Development of Small Scale Wind Turbine Blades using Hybrid	UNC Charlotte
Spectral Imaging	UNC Charlotte
Metal Organic Chemical Deposition Growth of ZnO Wide Bandgap	UNC Charlotte
Micro Scale Wind Turbine Development	EPIC
FSAE Carbon Fiber Layup Program	UNC Charlotte MS
FSAE Suspension/Chassis Design	UNC Charlotte MS
FSAE Engine Team Spring 2012	UNC Charlotte MS
Stirling Engine Development	UNC Charlotte
Expander and Compressor for IPAC	UNC Charlotte
Einstein Refrigerator	Student
Spectral Images	UNC Charlotte
Distance ED	UNC Charlotte

If you want more information regarding this program or the Expo contact Bill Heybruck, director of the Industrial Solutions Lab at wfheybruck@uncc.edu or call 704-687-2934.

It's ALIVE

Friday, February 16 the Student Business Incubator at The Ben Craig Center (BCC) opened its doors to welcome a new program for a select group of UNC Charlotte students.

This new program provides business advisory services, connections, and a learning community that supports the launch of successful student-founded ventures.

The Ben Craig Center, a UNC Charlotte Business Partnership, has offered business incubation and acceleration services to high potential ventures since 1986, and now BCC is making it possible for UNC Charlotte young entrepreneurs to get the same benefits provided to other entrepreneurs in our region and community. To be eligible to take part in this new student incubator program, a company needs to be comprised of at least one founder and / or majority owner that is a UNC Charlotte student. Junior, Senior, and Graduate students in good standing and actively pursuing a degree or within 12 months of their graduation date are all eligible.

Ben Craig Center Controller Robert Aldrich has completed initial meetings and assessments for applicants to set-up space at the BCC Student Business Incubator. Four student businesses were admitted with start dates effective April 1, 2012.

For more information about the Student Business Incubator at Ben Craig Center, or if you want more information about any members of the initial class, contact Robert Aldrich at raldrich@bencraigcenter.com or call him at 704-548-9113.

49er Dogz, LLC	Franchise turnkey business system designed to operate in the most inconvenient, high traffic areas utilizing mobile food units and push carts to sell hotdogs	Darius Whitaker Senior, Political Science major Entrepreneur Certificate Program
Bucketlist	Social platform allowing users to create personal and group "bucket lists" with both user generated and sponsor promoted events and activities.	Brian Skerry Senior, Systems Engineering major
Consumer Consulted	Online service that acts as a medium between customers and companies, allowing customers to send companies their ideas (while getting paid) and for companies to get input directly from their customers	Zackary Hargett Junior, Finance major Entrepreneur Certificate Program
Tapity, Inc.	Mobile app development company with a strong emphasis on design and a specialty in Apple's iOS (iPhone, iPad, iPad Touch Platform	Jeremy Olson Senior, Software & Information Systems major Entrepreneurship Certificate Program

Event SMART Grid

May 1-2, 2012
UNC Charlotte Center City Building and EPIC Building, Charlotte, NC

The 2nd Annual North Carolina Smart Grid Forum gathered electric delivery system leaders from utilities, academia, the private sector, and federal, state and local governments to discuss ways to drive economic development in the North Carolina region. There is momentum in conducting research and development, manufacturing, installing, and operating smart grid technologies that has the potential to create new jobs. Forum participants explored how smart grid research, development and deployment will enable the growth of business, reward industry and consumers with valuable new products, and increase U.S. competitiveness.

Place

UNC Charlotte Center City Building
and EPIC Building, Charlotte, NC

Dates and Times

8:30-5:00 May 1, 2012 (Reception to Follow)
8:30-12:00 May 2, 2012

Contact Us

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Registration
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The InnoVenture 2012 Conference in Greenville, SC will discover new business opportunities and help them develop by connecting with customers, capital, talent and technology. Those attending will benefit from discovering opportunities they would otherwise not see, connecting with influential people who can be referral sources, and learning from a smart community of people. The conference agenda is organized as "conversations" composed of a series of brief presentations of high impact opportunities seeking connections from the audience followed by conversation cafes including audience participation. The conference is organized on a distinctive web-based social business development platform so those attending can connect with each other and also with other like-minded colleagues elsewhere.

IT'S COMING...

INNOVENTURE
CREATE THE FUTURE

INNOVENTURE 2012 TOUR AND CONFERENCE DISCOVERING AND DEVELOPING NEW BUSINESS OPPORTUNITIES

Greenville, SC - Tuesday and Wednesday, May 8 and 9
Tuesday, May 8, 2012 - 7:30am - 8:00pm
Wednesday, May 9, 2012 - 7:00am - 5:00pm

For details and to register:
www.innoventurecommunity.com/community/196/upcoming-events

CHARLOTTE 2012 INFORMATICS

Competing + Winning Through Analytics

McKinsey Global Institute calls Big Data

"the next frontier for innovation, competition and productivity."

TUESDAY	8AM-5PM	KEYNOTE
MAY 15, 2012	**THE RITZ-CARLTON**	**DR. TOM DAVENPORT**

TO REGISTER:
WWW.CCI.UNCC.EDU/ci2012

You are invited.

When: May 15, 2012, 8:15 a.m. to 5:00 p.m. at the Ritz-Carlton Charlotte. An optional session at 7:30 a.m. will provide an introduction to informatics.

What is it About? Expert speakers from across the country will explore what "Big Data" and analytics can mean to your business and organization, and how you can better compete in the 21st Century data-driven economy.

What is on the Program? Our keynote speaker, Dr. Tom Davenport, Chair of Information Technology and Management at Babson College, is one of the world's leading business strategy consultants.

Additionally, noted speakers from IBM, McKinsey & Company, Premier, Inc., Lowe's Companies, UNC Charlotte, CSG Systems and Tresata will participate.

Who Should Attend? We expect over 300 CEO's and Senior Business Executives, Informatics Professionals, and those seeking a better understanding of "Big Data" and its application in business.

Event Sponsors: Charlotte Research Institute; Family Dollar; Premier, Inc.; and Quaero, A CSG Solution. Additional sponsorship opportunities are available; contact Marjorie Bray at Marjorie.Bray@uncc.edu for information.

- **$350** STANDARD REGISTRATION
- **$300** EARLY BIRD (ends Friday, April 20)

REGISTER TODAY! www.cci.uncc.edu/ci2012

UNC CHARLOTTE College of Computing and Informatics

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UNC CHARLOTTE BELK COLLEGE *of* BUSINESS

UNC CHARLOTTE | Charlotte Research Institute

coming up

Summer 2012 issue will highlight research progress in the Energy Production and Infastructure Center. Note view from 3rd floor of newly completed EPIC building.

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